REMARKS

In the Final Office action, the Examiner rejected all the claims as being anticipated by the article by Dhome (*Hierarchical Approach For Polyhedra Recognition by Hypotheses Accumulation*). After reviewing the Office Action, applicants have decided to cancel the pending claims and submit a new claim set which more clearly differentiates over the teachings of Dhome. Applicants have filed a Request for Continued Examination (RCE) currently herewith.

The primary support for the new claims is found in the specification at page 5, line 23+, page 51, line 14+ and page 54, line 28+. As described therein, applicants' merging method is directed to the situation where two or more representations of a **single real surface** have been created from fitting steps using different sets of scan points. As set forth in the specification, this situation can occur when a portion of a surface of a scanned object is obscured by another object. "A scan of the region will result in different groups of points on the same particular object....Each point group would then be fit to a separate object resulting in multiple pieces **of the same surface**." In accordance with the subject invention, these two representations of **the same physical surface** can be merged into a single, more accurate, representation of that surface. This result is achieved in accordance with the subject invention by combining the scan points initially used to fit the two different portions of the same surface and fitting those combined points to create a new, single surface.

The Dhome reference relates to machine vision systems which must identify the shape and orientation of various polyhedral objects. In a first step, Dhome identifies a pair of adjacent faces (i.e. planar surfaces) and the angle between those faces (see Dhome, Figure 1). In the next steps, Dhome determines the view axis and model orientation of the faces. Finally, Dhome must determine the model center to construct the appropriate polyhedron. Dhome's intent is to collect information about multiple surfaces, starting with two planar surfaces and then to construct the entire object. In contrast, applicants' merging method deals with how to improve the modeling of **a single real surface** by combining scan points associated with different portions of that same surface.

New claim 23 was drafted in order to more clearly recite the differences between applicants' method and the teachings of Dhome. In this regard, it should be noted that both the

applicants and Dhome use the term "surface" in the same manner, but use the term "object" differently. More specifically, applicants use the term object to refer to a single primitive surface, such as planar or cylindrical objects. In contrast, Dhome uses the term object to refer to a collection of surfaces . Claim 23 includes language to reinforce that difference. Claim 23 reads as follows:

> 23. A method for merging first and second geometric primitive surfaces, **both lying on a single surface**, to form a single geometric primitive surface, **also lying on the same surface**, the first geometric primitive surface resulting from a fit to a first group of points **on said single surface**, and with the second geometric primitive surface resulting from a fit to a second group of points on the **same single surface**, said method comprising the steps of:
>
> creating a new group of points by combining the first and second group of points; and
>
> fitting a new single geometric primitive surface using the new group of points **whereby different portions of the same surface can be represented as a single surface**.

As can be appreciated, claim 23 is focused on the concept of merging two different sets of scan points associated with the same surface and using that combination in a fitting step to create a new surface that more accurately represents the single real surface. This approach is useful, for example, if a portion of the object is obscured during a scan or data points are derived from scans taken from different directions. In contrast, Dhome is interested in identifying polyhedral objects with multiple surfaces. As noted above, Dhome begins by identifying a pairs of surfaces and then determines orientation. Dhome does not teach or suggest attempting to improve the modeling of a single real surface by combining scan points associated with different portions of the same surface. Accordingly, it is respectfully submitted that the Dhome reference fails to anticipate or render obvious the invention defined in new claim 23 and allowance thereof, along with the claims depending therefrom, is respectfully solicited.

Respectfully submitted,

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Dated: November 4, 2005

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Atty Docket No.: KYRA-420